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TI Optimization technique for sewage sludge conditioning with polymer and skeleton builders

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CS Dep. Chem. Eng., Univ. Puerto Rico, Mayaguez, 00681, P. R.

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LA English

CC 60-2 (Waste Treatment and Disposal)

AB Sewage sludge conditioning with optimized combinations of a polymer and skeleton builders prior to filter pressing was studied to produce a more

porous and incompressible cake structure for successful sludge

dewatering. Response surface methodol. (RSM) was used to optimize

sludge conditioning, based on resulting net sludge solids yield.

Municipal sludge incinerator fly ash, cement

kiln dust, and bagasse were successful skeleton builders to

dewater primary sludge from a wastewater treatment plant

processing industrial and municipal effluents. The com. product, CALGON

WT-2640, a 6% by weight aqueous polymer solution, was used as chemical conditioner.

The optimum conditioning strategy when using fly ash

as a skeleton builder was addition of a polymer dose of 1.1% and a

fly ash dose of 151%, both based on the original dry

solid content of the sludge. This combined treatment increased the net

sludge solid yield by 580% when compared to conditioning with polymer

alone. The optimum conditioning strategy when using cement kiln

dust was to add the same dose of polymer as before, and a cement

dust dose of 173%. This combined treatment increased the net sludge solid

yield by 96%. For conditioning with bagasse, a polymer dose of 1.33% and

a bagasse dose of 37% was the optimum strategy. The resulting increase in

net yield was 1260%.

ST primary sludge filter press dewatering; polymer conditioning

primary sludge dewatering; incinerator fly ash

polymer sludge conditioning; cement kiln dust polymer sludge

conditioning; sugar can bagasse polymer sludge conditioning

IT Bagasse

(conditioning of primary wastewater sludge with polymer and, for enhanced filter press sludge dewatering)